UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/944,940	08/31/2001	Hiroshi Koizumi	16869P-030800US	2783

20350 7590 06/01/2005

TOWNSEND AND TOWNSEND AND CREW, LLP
TWO EMBARCADERO CENTER
EIGHTH FLOOR
SAN FRANCISCO, CA 94111-3834

EXAMINER	
CHOI, WOO H	

ART UNIT	PAPER NUMBER
2189	

DATE MAILED: 06/01/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/944,940	KOIZUMI ET AL.	
	Examiner	Art Unit	
	Woo H. Choi	2189	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07 April 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *19-27* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *19-27* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1 – 4 are rejected under 35 U.S.C. 102(e) as being anticipated by DeKoning *et al.* (US Patent No. 6,895,485, hereinafter "DeKoning '485").

4. With respect to claims 19, 20, 24, and 27, Dekoning '485 discloses a data storage system (figure 1, SAN 100) including a service processor (114, see also col. 5, lines 14 – 34) for controlling operation of the data storage system having a plurality of data storage areas, the service processor comprising:

a memory for storing performance requirement parameters concerning storage system performance for each of the plurality of data storage areas (col. 7, lines 51 – 57);

a system monitor (134) coupled to the data storage system to monitor performance of data storage operations;

a processor coupled to the memory to receive the performance requirement parameters and coupled to the system monitor to receive information about the performance of data storage operations and compare them with each other, whereby the processor detects whether each of the plurality of data storage areas is functioning within the performance requirement parameters (col. 8, lines 4 – 16); and

a data migration device (136) which migrates data stored in the data storage area where the performance of data storage operations does not satisfy the performance requirement parameters to a different data storage area (col. 8, lines 21 – 54).

5. With respect to claim 21, the performance related parameters include at least one of 1/O accessibility, data transfer volume, disk free space rate, disk busy rate, data transfer speed, and amount of cache resident data (col. 5, lines 61 – 64).

6. With respect to claim 22, the processor calculates an average of the performance related parameter per unit time and compares the average to the performance requirement parameters (col. 6, line 64, bandwidth or transaction rate is an average value per unit time).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claims 23 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over DeKoning '485 in view of DeKoning (US Patent No. 6,275,898, hereinafter "DeKoning '898") and further in view of Milillo et al. (US Patent No. 5,566,315, hereinafter "Milillo").

DeKoning '485 discloses all of the limitations of the parent claim as discussed above. DeKoning also disclose transferring of data from one physical volume to another physical volume (figure 4, 182 is shown to be migrated to 184 which are on different physical volumes, see col. 10, lines 64 – 67). DeKoning '485 also teaches data redundancy change (migration of 174 to 176 or 182 to 184 involves different number of disks which requires different striping strategy, i.e., different redundancy scheme).

While DeKoning ''485 implies a mirror disk (figure 1 volume 128 shows a 2 disk volume implies a RAID 1 configuration which is disk mirroring), DeKoning '898 expressly shows a mirrored volume (figure 9C, 956).

It would have been obvious to one of ordinary skill in the art, having the teachings of DeKoning '485 and DeKoning '898 before him at the time the invention was made, to use the RAID level migration teaching of the mass storage device of DeKoning '898 in the RAID based mass storage device of DeKoning '485, in order to be able to tune a storage subsystem's use of RAID management techniques to a particular application (DeKoning '898, col. 2, lines 40 – 41).

The above two DeKoning references do not specifically disclose staging of data into cache. On the other hand, Milillo et al. disclose a mass storage system with cache memory (Milillo, figure 1).

It would have been obvious to one of ordinary skill in the art, having the teachings of Milillo and DeKoning references before him at the time the invention was made, to use the cache memory in a mass storage device teachings of Milillo in the mass storage device disclosed by DeKoning references, in order to reduce access times and improve computer system performance by minimizing the non-productive times when the processor is waiting to read or write data (Milillo, col. 1, lines 46 – 49).

9. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over DeKoning '485 in view of Donovan et al. (US Patent No. 6,012,032, hereinafter "Donovan") and alternatively further in view of Conner et al. (US Patent No. 6,816,882, hereinafter "Conner").

DeKoning discloses all of the limitations of the parent claim as discussed above. However, DeKoning does not disclose charging for data storage. On the other hand, Donovan specifically discloses a method of charging for storage in accordance with the level of peformance (col. 1, lines 58 – 67).

It would have been obvious to one of ordinary skill in the art, having the teachings of DeKoning and Donovan before him at the time the invention was made, to use the charging for

data storage teachings of Donovan with the data storage system of DeKoning, in order to be able to offer computing and data processing services to customers. One skilled in the art would also have been motivated to adopt Donovan's teachings to be able to account for resource usage by various cost center more accurately for charge-back purposes (Donovan, col. 1, lines 17 – 23).

Donovan also teaches charging in proportion to the amount of time spent at a specific service level, which is equivalent to the claimed limitation of refunding the charge in proportion to the amount of time not spent in a specified service level.

Conner discloses a method of charging for computing and data processing services to customers that comprises charging for storage service (col. 13, lines 30 – 34). In addition, Conner specifically disclose a method of reducing charges for not meeting specified service levels (col. 10 lines 47 – 52).

It would have been obvious to one of ordinary skill in the art, having the teachings of Donovan, Conner and DeKoning before him at the time the invention was made, to use the SLA teachings of the data service method of Conner, in the data service offering of DeKoning and Donovan in order to enhance product offerings. SLA is a well known concept in service industries and is analogous to a warranty for a manufactured product, which provides a degree of assurance of product/service quality.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Woo H. Choi whose telephone number is (571) 272-4179. The examiner can normally be reached on M-F, 9:00-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matt Kim can be reached on (571) 272-4182. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

whc
May 19, 2005

MATTHEW KIM
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100